

BC2 Remote Hardware Setup and Maintenance Manual

SunovaWorX Inc.

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Chapter 1

Remote Hardware Setup

1.1 Cabling Setup of Tablet and Communication Peripherals¹

1.1.1 Summary

This procedure describes how to connect the components needed for proper operation of the BC2 remote controller tablet.

1.1.2 Component Checklist

Before assembling, verify that all of the components are present. The following components are standard:

- ☐ Tegar rugged tablet, model TRT – 5180 – 12 *See Figure 1.1 on page 3.*
- ☐ serial power module with 12V power cable *See Figure 1.2 on page 3.*
- ☐ Radio module with antenna
- ☐ female-female DB9 serial cable, with label RADIO. *See Figure 1.4 on page 4.*

If using the cell/sat option, the following components are also required:

- ☐ cell/sat module, cell antenna, and satellite antenna. *See Figure 1.3 on page 4.*
- ☐ female-female DB9 serial cable, with label CELL SAT. *See Figure 1.4 on page 4.*

1.1.3 Assembly

Figure 1.5 on page 6 shows physical cabling connections in a fully assembled remote tablet system. The following procedure describes the steps needed to connect these devices correctly.

Beginning with the serial power module,

¹Procedure: 190169 Version: v1-4-gb5b012d Date: 2019-07-11



Figure 1.1: Teguar Rugged Tablet



Figure 1.2: Serial Power Module showing labelled connections.

1. Connect the circular black 10-pin Chogori connector from the Broadcaster radio to the Chogori port labelled RADIO. The connector is keyed so you will have to rotate the plug until it slides into the port. Hand-tighten the screw ring to secure the connection.
2. Connect the circular black 10-pin Chogori connector from the cell/sat module to the Chogori port labelled CELL/SAT. The connector is keyed. Hand-tighten the screw ring to secure the connection.
3. Connect the DB9 cable labelled RADIO to the RADIO port. Hand-tighten the two screws to ensure a good connection.
4. Connect the DB9 cable labelled CELL SAT to the CELL/SAT port. Hand-tighten the two



Figure 1.3: Cell/Sat Comm Module with satellite antenna (at left) and cell antenna (at right).



Figure 1.4: Female-Female DB9 Serial Cable

screws to ensure a good connection.

5. Locate the cable labelled TABLET, and connect it to the barrel jack on the tablet labelled POWER.
6. Connect the free end of the DB9 cable labelled RADIO to the serial port on the tablet, labelled RADIO. Hand-tighten the two screws to ensure a good connection.

7. Connect the free end of the DB9 cable labelled CELL SAT to the serial port on the tablet, labelled CELL. Hand-tighten the two screws to ensure a good connection.
8. Locate the cable on the serial power module labelled POWER and connect it to your power source. Verify that there are three green Light Emitting Diodes (LEDs) lit inside the serial power module.

1.1.4 Mounting

How you mount your tablet, cell/sat module and antennas, and Broadcaster radio will depend on your specific needs.

- If using mounting hardware for the tablet, ensure that mount is secure before mounting the tablet to it.
- Mount the satellite antenna so that the largest white surface is facing upwards. Mount the antenna as high as reasonably possible. A clear view of the sky is important for producing good reception.
- Do not bend the satellite antenna too much: if the antenna cable forms part of a circle, the radius of that circle must not be less than 1.5 centimetres ($\frac{5}{8}$ ").
- Mount the cell antenna on a flat surface, at least 2 centimetres (1") from metal objects.
- Cell and satellite antennas must be a minimum of 1 metre (40") apart from each other and must be a minimum 1 metre (40") away from other antennas, including GPS antennas you may have.
- Use cable ties to secure antenna, power, and communication cables to avoid snags.

During winter months or if not using the tablet for a month or more, remove the tablet from its mount and store in a cool, dry location indoors. Use the wall outlet charger provided with the tablet to maintain a minimum battery charge while being stored.

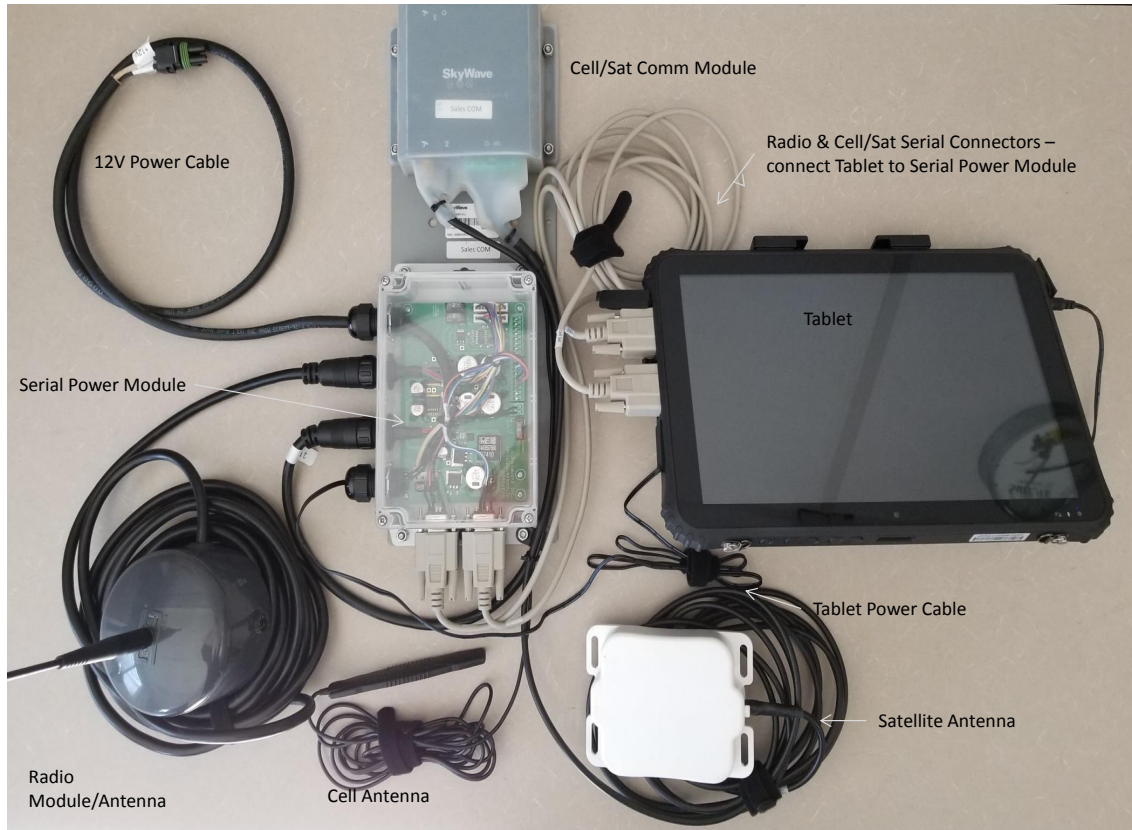


Figure 1.5: Assembled tablet, serial power module and peripherals.

Chapter 2

Tablet Quick Start

2.1 Booting Tablet and Finding BC2 Tablet Software and Manuals¹

2.1.1 Summary

This procedure describes how to start the tablet, locate the Broadcaster 2 remote control software and manuals, and power off the tablet.

2.1.2 Booting the Tegar Rugged Tablet

Begin the sequence of steps needed to prepare the tablet for use (called *booting*):

1. Locate the power button. (See Figure 2.2 on page 8).
2. Press and hold the power button until the blue power indicator light becomes visible. (See Figure 2.1 on page 7).
3. Wait for Windows 10 to start. This typically takes approximately 20 seconds, but can be longer when Windows is installing updates after a reboot.



Figure 2.1: Tablet Indicator Lights

¹Procedure: 190178 Version: v1-5-gc4bo627 Date: 2019-04-11



Figure 2.2: Tablet Input/Output

2.1.3 Locate BC2 Tablet Interface and Manuals

SunovaWorX provides digital PDF manuals that are updated in sync with the tablet software, and are located in a desktop folder called **Broadcaster Manuals**.

- BC2 Config User Manual: describes the BC2 Config program for setting up the tablet to control pumps.
- BC2 Tablet Interface Manual: describes how to control pumps, once the tablet has been set up.

The two main programs each have their own icons on the desktop, labelled BC2 Config and BC2 Tablet Interface.

The two manuals above detail how to use these programs; we recommended you begin with these manuals.

2.1.4 Powering off the Teguar Rugged Tablet

1. Exit/Close any programs currently in use.
2. Tap the Start  button (bottom-left corner of the screen).
3. Tap the  button, and then tap Shut down.

Chapter 3

Maintenance Checklist

3.1 General Maintenance Checklist for Tablet and Peripherals¹

3.1.1 Purpose

This procedure is a checklist for keeping in good working order the tablet and its communication and power peripheral devices.

3.1.2 Setup Checklist

These checks should be performed prior to usage of the tablet system.

- ☐ Do **NOT** plug in the tablet charging cable when the tablet temperature is below 0 °C (32 °F). Charging a frozen battery will cause permanent damage.
- ☐ With the system unpowered, check that components are plugged into the corresponding connections, according to the labels, at the serial power module and the tablet.
- ☐ Check all wiring and wiring connections for cracks, wear marks, and loose connectors.
- ☐ Verify that tablet power cable is installed from the serial power module and that tablet is charging.
- ☐ Verify that the radio, cell and satellite antennas are mounted correctly and are secure. Cell and satellite antennas must be minimum 1 metre (40") apart and at least 1 metre (40") away from other antennas such as a GPS antenna. This separation also applies to BC2 engine controllers mounted on a pumping unit.
- ☐ Verify tablet mount is secure and the tablet is secured properly to the mount.
- ☐ Since this is a touch-screen tablet, gently use an isopropyl alcohol wipe to clean the screen as needed to ensure good interfacing.

¹Procedure: 190160 Version: v1-2-gf381eod Date: 2019-07-11

3.1.3 Maintenance Checklist

These checks should be performed *after* the tablet is used.

- ❑ When possible, and especially during cold weather (0 °C or 32 °F) remove the tablet from its mount and store in a cool, dry location indoors.
- ❑ When not using the tablet, charge it on a weekly basis. Do **NOT** charge the tablet when it is below 0 °C (32 °F).
- ❑ Periodically check for software updates from Microsoft. This ensures that Windows will not force you to perform updates at an inconvenient time.
- ❑ Avoid using the tablet for personal, non-Broadcaster use. Installing 3rd party programs on the tablet may cause issues that are difficult and costly for SunovaWorX to diagnose.

Chapter 4

Updating Windows 10

4.1 Run Windows Updates¹

4.1.1 Summary

This procedure describes the steps required to check the availability of, download, and install software updates for the Microsoft Windows 10 operating system installed on the Teguar Rugged Tablets.

4.1.2 Requirements

- Teguar tablet powered ON
- Internet access (WiFi or Ethernet is recommended; cellular Internet via a SIM card may incur data charges)

4.1.3 When To Update

You should aim to check for updates:

- At the end of a pumping season as part of off-season maintenance.
- Before the beginning of a pumping season.
- If possible, on a monthly basis *during* the off-season.

If your pumping schedule does not have much of an off-season, aim to update Windows on at least a quarterly basis.

4.1.4 Updating

To start the process of checking for and retrieving updates:

1. Tap the Start  button at the bottom-left corner of the screen.

¹Procedure: 190191 Version: v1-1-gf96b8e5 Date: 2019-04-11

2. Tap the Settings  button.
3. Tap Update & Security.
4. In the Windows Update section, tap Check for updates.

Windows will automatically check which updates are available and will attempt to install them. You may be asked to restart your computer several times, depending on the number of updates being installed.

4.1.5 Results

These steps ensure that the operating system is ready when needed. Keeping Windows 10 up-to-date is an important part of tablet maintenance, along with regularly charging the battery in a cool, dry location.

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²Procedure: 190169 Version: v1-4-gb5b012d Date: 2019-07-11

³Procedure: 190178 Version: v1-5-gc4b0627 Date: 2019-04-11

⁴Procedure: 190160 Version: v1-2-gf381e0d Date: 2019-07-11

⁵Procedure: 190191 Version: v1-1-gf96b8e5 Date: 2019-04-11

Version History

	2020-03-18	*	Updated glossary.
	2020-03-12	*	Fixed duplicate index items.
	2019-07-25	*	Updated template.
	2019-07-22	*	Updated template.
	2019-07-11	*	Added glossary items and improved formatting.
	2019-04-11	*	Updates to procedures 190178 and 190191.
v2	2019-04-11	*	Merged procedure 190191 into main text and updated template_general.
	2019-04-11	*	Added procedure 190191 for updating Windows.
	2019-04-11	*	Updates to 190178.
	2019-04-11	*	Updated procedure 190178.
v1	2019-04-08	*	Updated main text and template.
	2019-04-08	*	Merged in procedure 190178.
	2019-04-03	*	Initial creation. Added procedure 190160 for tablet maintenance.

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List of Procedures By Number

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Acronyms

BC2 Broadcaster 2 2

LED Light Emitting Diode 5

Glossary

BC2	Broadcaster 2 (BC2). The name of SunovaWorX' Remote engine controller system, which supercedes the earlier Broadcaster 1 remote engine controller.	2
BC2 Tablet Interface	Previously called 'BC2Gui'. The software program designed for tablet computers, providing command and control of Broadcaster 2 remote engine controllers.	8, 14
cell/sat module	An Orbcomm IDP-782 satellite transceiver with cellular capability that connects BC2 engine controllers and remote via cellular and satellite communication.	2, 3, 5
Chogori	In this documentation, 'Chogori' refers to a 10-pin weatherproof screw connector or cable, named for the company that manufactures it.	3
DB9	A D-shaped connector with 9 pins, typically used for terminating serial communication cables.	2-5
LED	Light Emitting Diode (LED). A lower power light used in circuits.	5
serial power module	A device manufactured by SunovaWorX that provides power as well as radio and cellular/satellite connectivity to the tablet computer via serial communication.	2, 5, 10

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